

App. No. 10/682,090

### REMARKS/ARGUMENTS

#### **Amendments to Specification**

A minor editorial amendment has been made in the specification by replacing the paragraph starting on p. 18, line 20. An attorney docket number formerly used to identify a U.S. patent application has been replaced with the patent application number.

#### **Status of Claims**

Claims 1-35 remain.

#### **35 U.S.C 112 Claim Rejections**

With regard to claims 17 and 18, the Examiner alleges that there is insufficient antecedent basis for the expression "the narrow bandwidth operating mode". Claims 17 and 18 have been amended to recite "the narrow beamwidth operating mode". There is a proper antecedent basis for this expression in independent claim 15.

#### **35 U.S.C 103 Claim Rejections**

The requirements for establishing a prima facie case of obviousness as set out in the MPEP Section 2143.01 require that the reference or references when combined teach all of the claimed limitations, that there be a reasonable expectation of success in realizing the claimed invention, and that there be a motivation to combine the references.

The Examiner has rejected claims 1-4, 12, 13, 15, 16, 30 and 32-35 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,340,948 (Munoz-Garcia) and U.S. Patent No. 6,759,983 (Eden).

With regard to claim 1, the Examiner alleges that the Munoz-Garcia discloses the majority of the features of the system claim. However, the Examiner states that Munoz-Garcia does not specifically disclose a system with a plurality of operating modes being associated with

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respective array antenna gain patterns having different beam widths. The Examiner alleges that Eden teaches a system with such a feature, pointing specifically to the specification at column 2, lines 54-60 and column 4 lines 24-28, which respectively disclose "a first antenna beam from a phased antenna array, the first antenna beam having a first beam width; providing a second antenna beam from a second phased antenna array, a second antenna beam having a second beam width" and "one phase shifter operates at +60 degrees and the other operates at -60 degrees".

Claim 1 recites "to combine output signals from the plurality of signal shifters for output to the feeding port in a plurality of operating modes, the plurality of operating modes being associated with respective array antenna gain patterns having different beamwidths". Some examples of the plurality of operating modes being associated with respective array antenna gain patterns having different beamwidths are described in the specification on page 19, lines 24-31. "A wide beamwidth operating mode is useful for such functions as scanning or listening for incoming communication traffic or link requests. The high gain directional or narrow beamwidth operating mode for communication functions simultaneously increases received signal power and reduces interference. Both operating modes are provided using a single antenna structure and phase shifters".

The Examiner equates the use of two phase shifters in Eden, one operating at +60 degrees and one operating at -60 degrees to the "operating modes" of claim 1. Applicant submits that operating these two phase shifters at +/-60 degrees do not represent "a plurality of operating modes being associated with respective array antenna gain patterns having different beamwidths" as recited in claim 1. Eden discloses simultaneously operating two phased array antennas to "provide two outputs representing two adjacent antenna beams with a small angular separation (called the squint angle) between them" (column 11, lines 64-67). Applicant submits that the angle of operation of the phase shifters, for example +/-60 degrees, controls an angular shift of the respective beams (column 8, line 55 – column 9, line 17). The combined angular shift of the two beams equals the small angular separation between the two beams described above. The angle of operation of the phase shifters controls the angular shift of the individual beams, it does not provide "a plurality of operating modes being associated with respective array antenna gain patterns having different beamwidths".

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Furthermore, there is no suggestion or disclosure in Eden of the disclosed first and second antenna beam gain patterns having different beam widths. A different beam width in claim 1 denotes a different size and/or shape of the beam, for example the wide beam width of the wide beam width operating mode and the narrow beam width of the narrow beam width operating mode described in the specification. Eden discloses a system having a symmetrical phased array consisting of two eight element phased arrays (Figure 4 and Figure 5A). Eden teaches using symmetrical phase shifter values (for example +/-60 degrees or +/-90 degrees) that would result in similarly shaped beam patterns for the two beams, not beams having "different beamwidths".

The claims of the current application are directed to transmission of a signal using a phased array antenna. Claim 1 recites "an adaptive beamformer configured to distribute input signals from the feeding port to the plurality of signal shifters" (emphasis added). The input signals are supplied from the feeding port to the adaptive beamformer, then to the phase shifters, and then to the antenna elements to be transmitted. Eden is directed to detecting (receiving) signals and geolocating weak signals. Applicant submits that Eden should not be used in the obviousness rejection of the present claims because the elements disclosed by Eden and used in the objection are to be used in a system for receiving signals and the claimed invention is directed to a system for transmitting signals. Therefore, all the limitations of claim 1 are not disclosed by the combination of Munoz-Garcia and Eden, because the features alleged to be disclosed by Eden are not the same as those recited in claim 1.

The references of Munoz-Garcia and Eden, either alone or in combination, do not suggest or teach all of the claimed limitations of claim 1. Therefore, the Examiner has failed to satisfy a first necessary criterion for establishing a *prima facie* case of obviousness with respect to claim 1.

According to The Manual of Patent Examining Procedure, Section 2143.01 "there are three possible sources for a motivation to combine references: the natures of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art". It is respectfully submitted that the Examiner has not established a motivation to combine the references from any of the three sources.

With regard to the first source for a motivation to combine, Applicant submits that the

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nature of the problem to be solved is not the same in the two references as is made evident by the fact that the International and U.S. classifications are different for the two references and a significant number of the Fields of Search are also not found to be in common. Munoz-Garcia teaches a system for generating or receiving an angularly dispersed array of radiation beams and Eden teaches methods and devices for precise geolocation of low-power, broadband, amplitude-modulated rf and microwave signals having poor coherency.

With regard to the second source for a motivation to combine, Applicant submits that neither of the two pieces of cited art suggest the subject matter of the other piece of prior art in a manner that would lead one skilled in the art to arrive at the claimed invention by a review of the two references. In addition, neither reference refers to the other. Furthermore, the respective prior art does not suggest, either alone or in combination the desirability of the claimed invention. As was clearly stated *In re Kotzab*, 55 USPQ2d 1313, 1318 "Identification of prior art statements that, in abstract, appear to suggest claimed limitation does not establish *prima facie* obviousness without a finding as to specific understanding or principle within knowledge of skilled artisan that would have motivated one with no knowledge of invention at issue to make combination in manner claimed" (emphasis added). Applicant submits that the Examiner has combined separate and unrelated aspects of Eden, the phase shifters operating at +/-60 degrees and the first and second antenna beams having respective first and second beam widths in alleging that Eden teaches the features that Munoz-Garcia does not disclose. Applicant respectfully submits that the elements the Examiner has selected in Eden to combine with Munoz-Garcia are a prime example of "identification of prior art statements that, in abstract, appear to suggest claimed limitation" but clearly do not result in the invention in the manner claimed. Furthermore, the Examiner has not provided proper motivation for why a person skilled in the art would consider combining the transceiver system of Munoz-Garcia with the features alleged by the Examiner to be found in the receiver of Eden to result in the transmitter system recited in the present application in the manner claimed.

With regard to the third source for a motivation to combine, Applicant submits that the Examiner has failed to show motivation based on the knowledge of persons of ordinary skill in the art. The Examiner has stated that a motivation for combining the two references is "providing

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a system where a single antenna may be used to generate a large number of beams, with improved beam coverage and reduced dropoff" (emphasis added), taken directly from Munoz-Garcia at column 3, lines 16-19. However the Examiner does not provide any clear indication of the particular knowledge that one skilled in the art would have at the time of the invention for combining Munoz-Garcia and Eden, especially in view of the fact that Eden discloses the use of first and second phased antenna arrays, whereas Munoz-Garcia provides a system for a single antenna, as conceded by the Examiner above.

Applicant submits that combining the references to achieve any form of operable system would require changing the principle of operation of the system of Munoz-Garcia to have the single phased array antenna be subdivided into both first and second phased array antennas. As the principle of operation of the Munoz-Garcia invention would require such a change to arrive at any form of operable system, Applicant submits that there is no motivation to combine the references. Furthermore, Applicant submits that such a combination would still not provide the claimed invention.

Whereas the two inventions of Munoz-Garcia and Eden utilize single and first and second phased arrays, respectively, Applicant submits that Eden in fact teaches away from Munoz-Garcia. This is yet another reason that there would be no motivation for one skilled in the art to combine the references as suggested by the Examiner.

As the Examiner has failed to satisfy the necessary criteria for establishing a *prima facie* case of obviousness with respect to claim 1, for at least the reasons discussed above, Applicant submits that claim 1 patentably distinguishes over the combination of Munoz-Garcia and Eden. It is respectfully requested that the Examiner reconsider and withdraw the obviousness rejection of claim 1.

Independent claims 15 and 30 recite similar subject matter to claim 1 and for at least the reasons discussed above Applicant respectfully submits that the claims patentably distinguish over the combination of Munoz-Garcia and Eden and they are allowable.

Dependent claims 2-4, 12, 13, 16 and 32-35 are dependent upon independent claims 1, 15 and 30, either directly or indirectly and Applicant respectfully submits that they are allowable as

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well.

It is respectfully requested that the Examiner reconsider and withdraw the obviousness rejection of claims 2-4, 12, 13, 15, 16, 30 and 32-35.

Furthermore, with regard to claim 13, the Examiner states that Eden discloses a first array antenna gain pattern having a first beamwidth and a second operating mode associated with a second array antenna gain pattern having a second beamwidth narrower than the first beamwidth. The Examiner equates the "squint angle" separating the first and second beams disclosed by Eden with the "narrower beam width" recited in claim 13. Applicant respectfully submits that the squint angle has nothing to do with a narrower beam width, but is an angle of separation between the two distinct beams, each having their own respective beam widths. The Examiner also uses this argument in the rejection of claims 15, 30 and 35 and in each case Applicant submits it is incorrect.

Claims 5-11, 14, 17-25 and 27 are rejected based on the combination of Munoz-Garcia and Eden and further in view of other cited references.

Claims 5-11, 14 and 17-19 are dependent on independent claims 1 and 15, either directly or indirectly. Applicant respectfully submits that the claims patentably distinguish over the combination of Munoz-Garcia and Eden and the additional cited references and that they are allowable as well.

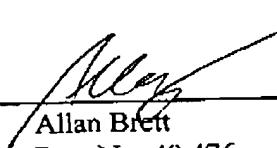
With regard to independent claims 20 and 29 and claims dependent on them, Applicant submits that the scope of subject matter recited in these claims is similar to that of claim 1. As Applicant submits that the claims patentably distinguish over the combination of Munoz-Garcia and Eden, it is further submitted that for at least the reasons discussed above the claims patentably distinguish over the combination of Munoz-Garcia and Eden in view of the other cited references.

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In view of the forgoing, early favourable consideration of this application is earnestly solicited.

Respectfully submitted,

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